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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,927	01/16/2004	Calum Macrae	100628.52908US	8202

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EXAMINER

EISEN, ALEXANDER

ART UNIT PAPER NUMBER

2674

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/759,927

Applicant(s)

MACRAE, CALUM

Examiner

Alexander Eisen

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10, 11, 17-19, 24, 27 and 34-36 is/are rejected.
- 7) ☒ Claim(s) 4-9, 12-16, 20-23 and 28-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/2/04, 2/3/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 17-19, 24, 27 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et al., (hereinafter Yanagi), USP 6,784,863 B2.

With respect to claims 1, 34 and 36 Yanagi discloses a circuit (FIGS. 1-3) for adjusting a common electrode voltage  $V_{com}$  for a liquid crystal display comprising a controller 5 to receive clock pulses CLK for changing a common voltage by a way of a single wire interface (see provided by a single wire signal CLK), and to cause the common electrode voltage  $V_{com}$  to change in response to the command (the common voltage  $V_{com}$  is switched between  $V_{ref1}$  and  $V_{ref2}$  caused by the output of a decoder 5c).

While Yanagi does not expressly disclose that the series of clock signals represent a command, it teaches that the change of the common voltage occurs at a predetermined number of clocks counted by a counter 5b and decoded by the decoder 5c. (col. 8, line 67 – col. 9, line 31). It would be obvious to one of ordinary skill in the art at the time when the invention was made that a predetermined number of clocks required for activation the change in the value of the common voltage  $V_{com}$  represent a certain coded value and therefore can be interpreted as a command, causing the aforesaid action.

As to claim 2 the circuit comprises a counter 5b for generating a count related to the common voltage Vcom.

As to claim 3, the controller changes counter value in response to the command.

In regards to claims 18 and 35, it would obvious to those of ordinary skill in the art at the time of the invention that since Vcom is switched in response to various values of the counter 5b between the two voltages Vref1 and Vref2, then it would increase in response to one value (command) and decrease in response to the other value of the counter (compare to the second command), since it is clear that given that the values Vref1 and Vref2 relate to each other as higher and lower values, the switching from one to another would mean increase or decrease in Vcom accordingly.

As to claim 17, using lower power circuits for reducing consummation of power is well known in the art and is a commonly desired feature for obvious economical reasons.

As to claim 19, the method of controlling the common voltage constitute generating a count by means of the counter 5b and clock signal CLK.

As to claims 24 and 27, the count is generated in response to a pulse (CLK signal).

3. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi in view of Tsutsui et al., (Tsutsui), US Pub 2004/0036666A1.

With respect to claims 10 and 11 Yanagi discloses the circuit (FIGS. 1-3) for adjusting a common electrode voltage Vcom for a liquid crystal display comprising a controller 5 to receive clock pulses CLK for changing a common voltage by a way of a single wire interface, and to cause the common electrode voltage Vcom to change in response to the command; the circuit further comprising a counter 5b for generating a count related to the common voltage Vcom.

Yanagi does not disclose a non-volatile memory for storing the count.

Tsutsui teaches a liquid crystal display calibrating system (FIG. 1), wherein the data for adjusting the common electrode voltage is stored in non-volatile memory 221 (paragraphs 28-30).

As per claim 10, it would have been obvious to one of ordinary skill in the art at the time when the invention was made that the count value for indicating the common electrode voltage adjustment obtained in Yanagi by means of the counter 5b can be obtain alternatively by pre-storing this value into a memory as taught by Tsutsui for consecutive retrieval when issuing a command to adjust the voltage. Such a replacement would not bring about any unexpected result or cause unduly experimentation, and would simply constitute an alternative design choice.

As to claim 11, while none of the above references teach the non-volatile memory being an EEPROM memory, this type of non-volatile memory would be well known to those artisans, which would render its application for storing the count also obvious.

***Allowable Subject Matter***

4. Claims 4-9, 12-16, 20-23, 25, 26 and 28-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: none of the references, either singularly or in combination, teach or fairly suggest a calibration circuit for adjusting a common electrode voltage for an LCD by the way of a single-wire interface comprising a counter to generate a count related to the common voltage and a DAC to generate an intermediate voltage related to the count; or further comprising a non-volatile

memory, wherein a controller causes the count of the counter to be rewritten into the non-volatile memory in response to a second command received by the way of the single-wire interface; or wherein the controller includes an enable input for receiving a second command, which causes the controller to ignore the first command; or a method for calibrating a common voltage for an LCD comprising receiving a third command to store the count in a non-volatile memory and storing the count into the non-volatile memory in response to the third command; or incrementing or decrementing the count in response to the first command; or wherein a minimum amplitude of a pulse is below a predetermined amplitude threshold to indicate that the second command is for decreasing the common electrode voltage; wherein the width of the pulse is above a predetermined width threshold to indicate that the pulse should not be ignored.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Kawaguchi et al., US 6,677,925 B1**, discloses a controller for adjusting a common electrode voltage of LCD via a single-wire interface (FIG. 1).

**Wettroth et al., US 6,298,066 B1**, discusses the benefits of using a single-wire interface in a variety of circuits.

**Akiyama et al., US 6,201,523 B1**, discloses a single-wired interface for controlling a common voltage for LCD.

**Ludden, US 2004-0207592 A1**, discloses a serial-to-parallel control command conversion for controlling various drivers of an LCD.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is (571) 272-7687.

The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander Eisen  
Primary Examiner  
Art Unit 2674

2005-07-19